Motivation for Reduced-Gravity Experiments:

- Density gradients resulting from variations in species or concentrations, or resulting from exothermic reactions are affected by buoyant convection under normal gravity conditions.
- Buoyant convection is the dominant heat and mass transfer mechanism in 1g, and masks comparatively weaker transport by radiation, diffusion, and capillarity (i.e. surface tension).
- Reduced-gravity environment also valuable for scaling spatial and temporal dimensions (e.g. deployment of large droplets; $Gr \sim L^3$), and for containerless processing applications.

Reduction in Gravity $\Rightarrow$ **Diminished Buoyant Forces** $\Rightarrow$ **Strong Differences in Observed Flowfields**

$\Rightarrow$ ***Importance of Developing Diagnostics for Quantitative Velocity Field Measurements***